

are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric, or defects in the internal floating roof, the owner or operator shall repair the items before filling the storage vessel.

(d) *IFR repair requirements.* The owner or operator shall repair any observed or determined failures according to paragraphs (d)(1) and (2) of this section:

(1) If an IFR type A failure is observed, the owner or operator shall repair the items or empty and remove the storage vessel from service within 45 calendar days. If the failure cannot be repaired within 45 calendar days or if the vessel cannot be emptied within 45 calendar days, the owner or operator may utilize up to two extensions of up to 30 additional calendar days each and keep the records specified in § 65.47(d).

(2) If an IFR type B failure is determined, the owner or operator shall repair the items and comply with the refilling notification requirements of § 65.48(c)(1) before refilling the storage vessel with regulated material.

§ 65.44 External floating roof (EFR).

(a) *EFR design requirements.* The owner or operator who elects to control storage vessel regulated material emissions by using an external floating roof shall comply with the design requirements listed in paragraphs (a)(1) through (3) of this section.

(1) The external floating roof shall be designed to float on the stored liquid surface except when the floating roof must be supported by the leg supports.

(2) The external floating roof shall be equipped with a closure device between the wall of the storage vessel and the roof edge.

(i) Except as provided in paragraph (a)(2)(iii) of this section, the closure device is to consist of two continuous seals, one above the other. The lower seal is referred to as the primary seal and the upper seal is referred to as the secondary seal.

(ii) Except as provided in paragraph (a)(2)(iv) of this section, the primary seal shall be either a metallic shoe seal or a liquid-mounted seal.

(iii) If the external floating roof is equipped with a liquid-mounted or metallic shoe primary seal as of December 31, 1992, the requirement for a sec-

ondary seal in paragraph (a)(2)(i) of this section does not apply until the next time the storage vessel is emptied and degassed, or by April 22, 2004, whichever occurs first.

(iv) If the external floating roof is equipped with a vapor-mounted primary seal and a secondary seal as of December 31, 1992, the requirement for a liquid-mounted or metallic shoe primary seal in paragraph (a)(2)(ii) of this section does not apply until the next time the storage vessel is emptied and degassed, or by April 22, 2004, whichever occurs first.

(3) The external floating roof shall meet the following specifications:

(i) Except for automatic bleeder vents (vacuum breaker vents) and rim space vents, each opening in the non-contact external floating roof shall provide a projection below the stored liquid surface except as provided in paragraph (a)(3)(xiii) of this section.

(ii) Covers on each access hatch and each gauge float well shall be designed to be bolted or fastened when they are closed.

(iii) Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening shall be equipped with a gasketed cover, seal, or lid.

(iv) Automatic bleeder vents and rim space vents shall be equipped with a gasket.

(v) Each roof drain that empties into the stored liquid shall be equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening.

(vi) Each unslotted and slotted guide pole well shall be equipped with a gasketed sliding cover or a flexible fabric sleeve seal.

(vii) Except for antirotational devices equipped with a welded cap, each unslotted guide pole shall be equipped with a gasketed cap on the end of the pole.

(viii) Each slotted guide pole shall be equipped with a gasketed float or other device that closes off the stored liquid surface from the atmosphere.

(ix) Each gauge hatch/sample well shall be equipped with a gasketed cover.

(x) Where a metallic shoe seal is in use as the primary seal, one end of the

metallic shoe shall be designed to extend into the stored liquid and the other end shall extend a minimum vertical distance of 61 centimeters (24 inches) above the stored liquid surface.

(xi) The secondary seal shall be designed to be installed above the primary seal so that it completely covers the space between the roof edge and the vessel wall.

(xii) For the primary and secondary seals, there shall be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope.

(xiii) If each opening in a noncontact external floating roof except for automatic bleeder vents (vacuum breaker vents) and rim space vents does not provide a projection below the liquid surface as of December 31, 1992, the requirement for providing these projections below the liquid surface does not apply until the next time the storage vessel is emptied and degassed, or by April 22, 2004, whichever occurs first.

(b) *EFR operational requirements.* The owner or operator using an external floating roof shall comply with the following operational requirements:

(1) The external floating roof shall float on the stored liquid surface at all times except when the floating roof must be supported by the leg supports.

(2) When the floating roof is resting on the leg supports, the process of filling or refilling shall be continuous and shall be accomplished as soon as practical, and the owner or operator shall maintain the record specified in § 65.47(e).

(3) Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening shall be maintained in a closed position (*i.e.*, no visible gap) at all times except when the device is in actual use.

(4) Covers on each access hatch and each gauge float well shall be bolted or fastened when they are closed.

(5) Automatic bleeder vents are to be set to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.

(6) Rim space vents are to be set to open only when the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds

the manufacturer's recommended setting.

(7) The cap on the end of each unslotted guide pole shall be closed at all times except when gauging the stored liquid level or taking samples of the stored liquid.

(8) The cover on each gauge hatch/sample well shall be closed at all times except when the hatch or well must be open for access.

(9) Except during the inspections required by paragraph (c) of this section, both the primary seal and the secondary seal shall completely cover the annular space between the external floating roof and the wall of the storage vessel in a continuous fashion.

(c) *EFR inspection requirements.* To demonstrate compliance for an external floating roof vessel, the owner or operator shall use the procedures in paragraphs (c)(4) through (9) of this section for seal gaps according to the frequency specified in paragraphs (c)(1) through (3) of this section and meet the requirements of paragraph (c)(10) of this section.

(1) Measurements of gaps between the vessel wall and the primary seal shall be performed no less frequently than once every 5 years and at the times specified in paragraphs (c)(1)(i) and (ii) of this section. The owner or operator shall maintain records of the EFR seal gap measurements as specified in § 65.47(c)(2).

(i) During the hydrostatic testing of the vessel, by initial startup, or within 90 days of the initial fill with regulated material.

(ii) For an external floating roof vessel equipped with a liquid-mounted or metallic shoe primary seal and without a secondary seal as provided for in paragraph (a)(2)(iii) of this section, measurements of gaps between the vessel wall and the primary seal shall be performed at least once per year until a secondary seal is installed. When a secondary seal is installed above the primary seal, measurements of gaps between the vessel wall and both the primary and secondary seals shall be performed within 90 calendar days of installation of the secondary seal and according to the frequency specified in paragraphs (c)(1) through (3) of this section thereafter.

(2) Measurements of gaps between the vessel wall and the secondary seal shall be performed no less frequently than once per year and within 90 days of the initial fill with regulated material, within 90 days of installation of the secondary seal, or by initial startup. The owner or operator shall maintain records of the EFR seal gap measurements as specified in § 65.47(c)(2).

(3) If any storage vessel ceases to store regulated material for a period of 1 year or more, measurements of gaps between the vessel wall and the primary seal, and gaps between the vessel wall and the secondary seal shall be performed within 90 days of the vessel being refilled with regulated material. The owner or operator shall maintain records of the EFR seal gap measurements as specified in § 65.47(c)(2).

(4) If the tank contains regulated material, all primary seal inspections or gap measurements that require the removal or dislodging of the secondary seal shall be accomplished as soon as possible, and the secondary seal shall be replaced as soon as possible.

(5) The owner or operator shall notify the Administrator 30 days before any EFR seal gap measurement as specified in § 65.48(c)(2).

(6) Except as provided in paragraph (d) of this section, the owner or operator shall determine gap widths and gap areas in the primary and secondary seals (seal gaps) individually by the following procedures:

(i) Seal gaps, if any, shall be measured at one or more floating roof levels when the roof is not resting on the roof leg supports.

(ii) Seal gaps, if any, shall be measured around the entire circumference of the vessel in each place where a 0.32 centimeter ($\frac{1}{8}$ inch) diameter uniform probe passes freely (without forcing or binding against the seal) between the seal and the wall of the storage vessel. The circumferential distance of each such location shall also be measured.

(iii) The total surface area of each gap described in paragraph (c)(6)(ii) of this section shall be determined by using probes of various widths to measure accurately the actual distance from the vessel wall to the seal and multiplying each such width by its respective circumferential distance.

(7) The owner or operator shall add the gap surface area of each gap location for the primary seal and divide the sum by the nominal diameter of the vessel. The owner or operator shall include the calculations in the record of the seal gap measurement as specified in § 65.47(c)(2). For metallic shoe primary seals or liquid-mounted primary seals, the accumulated area of gaps between the vessel wall and the primary seal shall not exceed 212 square centimeters per meter of vessel diameter (10.0 square inches per foot of vessel diameter) and the width of any portion of any gap shall not exceed 3.81 centimeters (1.50 inches).

(8) The owner or operator shall add the gap surface area of each gap location for the secondary seal and divide the sum by the nominal diameter of the vessel. The owner or operator shall include the calculations in the record of the seal gap measurement as specified in § 65.47(c)(2). The accumulated area of gaps between the vessel wall and the secondary seal used in combination with a metallic shoe seal or liquid-mounted primary seal shall not exceed 21.2 square centimeters per meter of vessel diameter (1.00 square inch per foot of vessel diameter) and the width of any portion of any gap shall not exceed 1.27 centimeters (0.50 inch). The secondary seal gap requirements may be exceeded during the measurement of primary seal gaps as required by paragraph (c)(1) of this section.

(9) If the owner or operator determines that it is unsafe to perform the seal gap measurements or to inspect the vessel to determine compliance because the floating roof appears to be structurally unsound and poses an imminent or potential danger to inspecting personnel, the owner or operator shall comply with one of the following requirements:

(i) The owner or operator shall measure the seal gaps or inspect the storage vessel no later than 30 calendar days after the determination that the roof is unsafe; or

(ii) The owner or operator shall empty and remove the storage vessel from service no later than 45 calendar days after determining that the roof is unsafe. If the vessel cannot be emptied

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within 45 calendar days, the owner or operator may utilize up to two extensions of up to 30 additional calendar days each and comply with the recordkeeping requirements in § 65.47(d).

(10) The owner or operator shall visually inspect for EFR failures, the external floating roof, the primary seal, secondary seal, and fittings prior to initial filling and each time the vessel is emptied (including initially before the vessel is filled with regulated material), shall maintain records of the EFR inspection results as specified in § 65.47(c)(1), and shall comply with the refilling notification requirements specified in § 65.48(c)(1).

(d) *EFR repair requirements.* (1) The owner or operator shall repair conditions that do not meet seal gap specifications listed in paragraphs (c)(7) and (8) of this section or any EFR failure observed by the inspection required by paragraph (c)(10) of this section no later than 45 calendar days after identification, or shall empty and remove the storage vessel from service no later than 45 calendar days after identification. If the vessel cannot be repaired or emptied within 45 calendar days, the owner or operator may utilize up to two extensions of up to 30 additional calendar days each and comply with the recordkeeping requirements in § 65.47(d).

(2) If an EFR failure is observed by the inspection required by paragraph (c)(10) of this section, the owner or operator shall repair the items as necessary so that none of the conditions specified in paragraph (c)(10) of this section exist before filling or refilling the storage vessel with regulated material.

§ 65.45 External floating roof converted into an internal floating roof.

The owner or operator who elects to control storage vessel regulated material emissions by using an external floating roof converted into an internal floating roof shall comply with the internal floating roof requirements of § 65.43 except § 65.43(a)(3), (b)(2), and (b)(3) and the external floating roof deck fitting requirements of § 65.44 except § 65.44(a)(1), (a)(2), (b)(1), (b)(8), (b)(9), (c), and (d), including the record-

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keeping and reporting provisions referenced therein.

§ 65.46 Alternative means of emission limitation.

Any person seeking permission to use an alternative means of compliance under this section shall use the procedures of § 65.8.

§ 65.47 Recordkeeping provisions.

(a) *Retention time.* Each owner or operator of a storage vessel subject to this subpart shall meet the requirements of § 65.4, except the record specified in paragraph (b) of this section shall be kept as long as the storage vessel is in operation.

(b) *Vessel dimensions and capacity.* Each owner or operator of a storage vessel subject to this subpart shall keep readily accessible records showing the dimensions of the storage vessel and an analysis of the capacity of the storage vessel.

(c) *Inspection results.* The owner or operator shall keep the records specified in paragraphs (c)(1) and (2) of this section.

(1) For each IFR or EFR inspection required by § 65.43(c)(1) and (2), or § 65.44(c)(10), respectively, a record containing the following information, as appropriate:

(i) In the event that no IFR type A failure, IFR type B failure, or EFR failure is observed, a record showing that the inspection was performed. The record shall identify the storage vessel on which the inspection was performed, the date the storage vessel was inspected, and references indicating which items were inspected.

(ii) In the event that an IFR type A failure, IFR type B failure, or EFR failure is observed, a record that identifies the storage vessel on which the inspection was performed, the date the storage vessel was inspected, a description of the failure and of the repair made, the date the vessel was emptied (if applicable), and the date that the repair was made. As specified in § 65.48(b)(1), the owner or operator shall include this record in the periodic report.

(2) For each EFR seal gap measurement required by § 65.44(c)(1), (2), or (3), a record describing the results of the measurement. The record shall identify